datacolor

SpyderCHECKR™

The smarter color reference

User's Guide

Sept, 2010

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Introduction

As the digital imaging market evolves and the color management process becomes streamlined, the demand for affordable, accurate, and easy-to-use calibration solutions across the photographic workflow has increased. Datacolor's core strategy is to leverage our intimate knowledge of the photographer's digital workflow to create color management and calibration tools dedicated to helping photographers express their vision, save time, and reduce costs. Datacolor will continue our tradition of photographer-oriented products, and meet the market needs with our new SpyderCheckr™ and SpyderCheckr Pro™. SpyderCheckr™ provides a fast, reliable method of color calibrating your camera and lens combinations. It allows photographers to obtain more consistent, more accurate color within their standard RAW processing workflow in Lightroom™, Photoshop™, Elements™, and Bridge™. SpyderCheckr Pro package includes SpyderCube for capturing custom white balance, neutrality data from multiple lightsources and correcting highlight and shadow details.

Photographers speak in terms of emotion and are passionate about their images in one way or another. The entry level DSLR owner is excited to capture images of their children, family events, and vacations. The Advanced amateurs are passionate about their imaging and they aspire to have their work look professional. The pro photographer is both skilled and passionate and makes a living with their creative vision. They all want easy-to-use solutions for their digital workflows. They all want optimized images and accurate color from their shots, to their displays and in their final prints.

Datacolor gives amateur and professional photographers calibration tools they can depend on. Spyder products allow them to faithfully reproduce on their computer displays and in their final prints to what they captured with their cameras. Datacolor products offer a more efficient digital workflow and allow users to achieve their creative vision quickly and accurately without having to become color gurus.

Problem. Solution. Feature. Benefit.

Problem:

Every camera make, model, and individual chip records color in different ways. These camera sensors do not see the same as our eyes and the camera manufacturers go through a lot of trouble to manipulate the data so you get a realistic image. But, there is a lot going on that you have no knowledge or control of.

Solution:

Color control and consistency requires a color reference tool to account for these variations. Adding color management at the capture stage of your digital workflow assures consistency and accuracy from day to day as well as from camera to camera.

A custom camera profile enables you to apply a 'translation' that compensates for the characteristics of the light source and sensors to give a more accurate color reproduction in your images.

Feature:

Decrease trial and error color adjustment by correcting color automatically as part of your image import workflow. SpyderCheckr gives you the color reference to capture true color in your photo shoot, create a custom camera calibration and perform precision in-camera white balance.

Benefit:

SpyderCheckr helps capture consistent color from day to day and camera to camera and apply these results easily in your workflow with RAW import software such as, Adobe Photoshop and Lightroom. The sturdy, eco-friendly design has 48 spectrally engineered color patches, easy to use calibration software making post production quicker by getting consistent, predictable color right from the start**.**

The SpyderCheckr™ includes:

•SpyderCheckr™
•SpyderCheckr Software CD
•Quick Start Guide

Supported Languages: English, Spanish, French, German, Italian, Russian, Traditional Chinese, Simplified Chinese, Korean, Japanese

The SpyderCheckr Pro™ includes:

•SpyderCheckr™
•SpyderCheckr Software CD
•SpyderCube™
•Protective Pouch for SpyderCube
•Lanyard for SpyderCube
•Quick Start Guides

Supported Languages: English, Spanish, French, German, Italian, Russian, Traditional Chinese, Simplified Chinese, Korean, Japanese

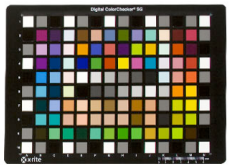
Operating Requirements:

- XP, Vista, Win 7
-
- Mac OS X (10.4 +)
- 128MB of available RAM
- 100MB of available hard disk space
- Adobe Lightroom, Photoshop, Elements or ACR

Product availability:

- Pre-Orders taken @ the end of August 2010
- Worldwide launch: Photokina, Germany: Sept. 2010 / Photo Plus, NY: Oct. 2010

Camera Calibration Tools Compared:



Pro Tool: Flexibility Rating

General Information	Datacolor: SpyderCheckr™	Datacolor: SpyderCheckr Pro™	X-Rite: ColorChecker Digital SG	X-Rite: ColorChecker Classic	X-Rite: ColorChecker Passport
Suggested Retail Price	$129.00 / 115 EUR	$169.00 / 145 EUR	$295.00	$77.00	$99.00
Material Construction	Rigid Resin Body	Rigid Resin Body	Cardboard	Cardboard	Plastic
Protective Case	Yes	Yes	No	No	Yes
Tri-Pod Mountable	Yes	Yes	No	No	No
Camera Calibration Software	Yes	Yes	No	No	Yes
SpyderCube	No	Yes	No	No	No
Target Features					
Number of Target Colors Patch Size	48 Large	48 Large	140 (only 96 unique patches) Very Small	24 Very Large	24 Very Small
Spectrally Formulated Colors	Yes	Yes	Yes	Yes	Yes
Extensive Skin Tones	Yes	Yes	Yes	No	No
Replaceable/ Double Sided Targets	Yes	Yes	No	No	No
FadeCheckr*	Yes	Yes	No	No	No
Software Features					
Color Adjustment Method	HSL Color Calibration file (Easily Adjustable)	HSL Color Calibration file (Easily Adjustable)	None	None	DNG Profile, No Adjustment Tools)
Color Reference	Yes	Yes	Yes	Yes	Yes
In-Camera White Balance	Yes	Yes	No	No	Yes
Software White Balance	Yes	Yes	Yes	Yes	Yes
Exposure: Setting & Verification	Yes	Yes	Yes	Limited	Yes
Camera Calibration	Yes	Yes	Not Included	Not Included	Yes

A Tour of the SpyderCheckr Workflow

Serious photography uses RAW format images, and RAW import software to process it. The goal of SpyderCheckr is to provide camera calibration that fits conveniently into that RAW workflow, and which is easy to adjust as desired to meet your own needs.

The SpyderCheckr Target

The SpyderCheckr closes for storage, opens like a book, and stays securely in its fully open position. Each half of the Checkr has a frame which holds a target sheet in place. By opening these frames, you can invert the target sheets to display their gray face. This will provide the SpyderCheckr Gray Target for visual comparisons to other neutrals or for other tasks such as In-Camera White Balance. In their usual Color Chart configuration the SpyderCheckr can be used for visual color comparisons, as well as with a number of third party software packages for camera profiling and other tasks. But the most common use is with our own SpyderCheckr software, to create camera calibrations.

Patch Formulation

The patches in SpyderCheckr are pigment based colors with carefully formulated spectral values to offer optimal spectral formulations for color patches, and extremely spectrally neutral black, white, and gray patches. The patches are long-life and produced to tight tolerances, so that replacement sheets for your ColorCheckr will provide similar colors many years from now to what the original patches represent today. A ColorCheckr which sees only light usage will be usable indefinitely. But for heavier use or cases where the patches become scratched, worn, or soiled over time, replacement sheets are available for purchase from the Datacolor webstore. Please avoid touching the patches in your SpyderCheckr, as oils from the skin can effect the patch color and texture.

Color Patches

The color patches in the right half of the SpyderCheckr represent the standard 24 colors used in a variety of color products. These patches are near or within the sRGB gamut to avoid gamut-clipping and assure usability with a wide range of capture, display and output devices. The order that various software programs read these standard 24 colors varies, but the SpyderCheckr provides them in a serpentine pattern, such that reading down one column and up the next will produce the usual measurement order.

The color patches in the left half of the SpyderCheckr represent additional colors targeting several specific uses. There are six additional skintones, for a total of eight. There are six medium saturation color patches, in the red, green, blue, cyan, magenta, and yellow zones, to improve the coverage of the inside of the color gamut. There are three near white tints and three near black tones, for checking color tints and tones at both ends of the dynamic range. And the gray ramp has been increased from the standard 20% steps, to 10% steps, plus extra samples at 5% and 95% to provide a more detailed gray ramp.

SpyderCheckr Patch Groups

Grays proceed from white (E1) down to black (E6) in 20% steps. The extra patches that provide 10% steps are patches D2 to D6. A zigzag path from A1 to A6 will cover the 10% gray ramp in order. An additional 95% patch is located at D1, and an additional 5% patch is located at C6 for more detail near white and black. The same 10% ramp patches are also repeated on the back of the chart, with a large 50% gray patch, for special uses requiring neutrals-only to be visible.
Skintones are located in a band from C1 to C5, plus B4, plus the two standard skintones at H5 and H6.
Near white tints in Red, Green, and Blue tints are located at B1, B2, and B3.
Near black tones in Red, Green, and Blue tones are located at B4, B5, and B6.
Medium saturation patches in RGBCM&Y take up the entire column A (A1-A6).
Full saturation patches are in columns F, G, and H.

Mounting Options

The SpyderCheckr has a standard tripod mount on the base. This allows very flexible mounting at any height or angle desired. However it's also possible to place the target on a table or shelf for simple uses; it will stand upright in stable locations. There is also a standard tripod stud at the top of the SpyderCheckr spine. This can be used to mount a SpyderCube, but also offers further mounting options.

Uses

There are numerous uses for a color target, and SpyderCheckr can be used for many of these, including both visual and digital capture functions. A number of software products which utilize color targets can be adapted to work with the SpyderCheckr, and support for the SpyderCheckr target in such applications should begin to be available shortly after the initial release of the SpyderCheckr product.

Lighting the SpyderCheckr

Mount the SpyderCheckr or place in a stable location. Light it from a 45 degree angle. The ideal way to light a target is to use a single lightsource, with no reflector or diffuser, from a long distance. This assures that all portions of the target will have the same amount and and color of light, reducing fall-off and color variation across the width of a target. A good fluorescent proofing lamp placed in front of the target, with the bulb along the length of the target, shining down from above at 45 degrees, will offer even light. The perfect light source (in terms of color quality, as well as being a point source at a great distance) is the sun... but the sun comes with an automatic second light source, diffused, and of a very different color, called sky light. So if you shoot the target using sunlight, its best to do it under an overhang where there is minimal skylight involved.

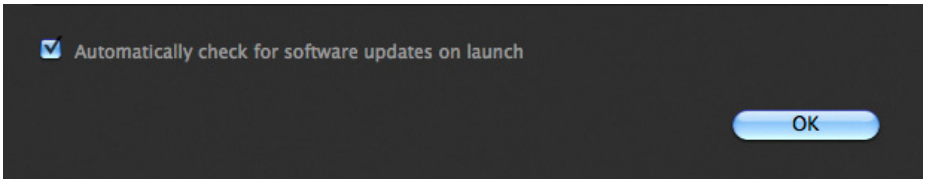
Shooting the SpyderCheckr

Don't fill up the whole viewfinder frame with the target, because distortion, vignetting and dirt are worst at the corners. Its best to shoot the target with a generous amount of border and crop it down later. Make sure the camera is directly in front of the target. Look closely at the shape the target makes: if the rectangle is wider at the top or bottom, or taller at one end than the other, you are not squarely in front of the target. A tripod can be useful. Autofocus produces excellent results. Fully Automatic settings are fine, though Aperture Priority, or full Manual settings are also good for those who are comfortable with them. It is important to shoot in the camera's RAW format, if it offers one. Take a few frames at different settings, if you are unsure of any of the variables.

SpyderCheckr Software: Download and Installation

Download and install the SpyderCheckr software for your platform from the Datacolor website. Run the installer. See section on Serialization below. This will install a folder in your Datacolor applications folder named SpyderCheckr. In that folder you'll find an application named SpyderCheckr, but Lightroom users won't need to launch it from there in general use; it will be self-launching, once you have configured Lightroom. If you use Photoshop or Elements, you will do your RAW import through Adobe CameraRaw (ACR), then you will need to launch the Checkr software manually, as there is no auto-launch option in ACR. If you typically use some other RAW import tool, you'll need to use ACR to create your calibrations. Once created, you can then use the Sidecar file from ACR in any other application which honors the Adobe Sidecar file format and the adjustments it contains.

Software Updates

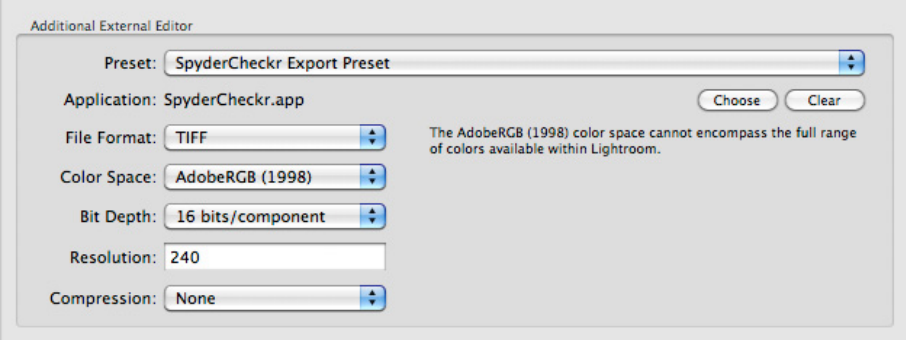


The software update option in the SpyderCheckr application (accessable in Preferences) is on by default. When Datacolor posts a new build of the software, on your next launch, it will tell you there is an update available, and offer to take you to the Datacolor website to download it.

Serialization

Your serial number is on the CD inside your package. Please place this sticker in an easy to find location for future reference. Our software uses a web-based activation process, so its simplest to install and activate our software from an internet connected computer.

Configuring Lightroom



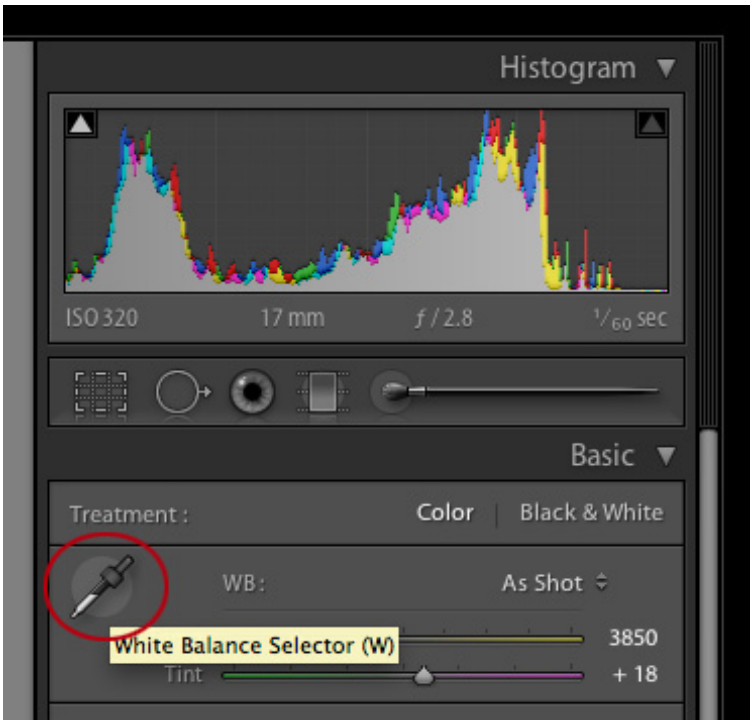
Go to Menu > Lightroom > Preferences and in the External Editing pane, in the Additional External Editor section, choose the SpyderCheckr Editing Preset (which is installed as part of the SpyderCheckr software installation) or set manually to Application > Choose, and navigate to the SpyderCheckr app in the SpyderCheckr folder in your Datacolor Folder (in the Applications folder on the Mac). If you set this manually, you will also need to set the other Additional External Editor settings to File Format > Tiff, and Color Space > AdobeRGB.

Opening the Target Shot

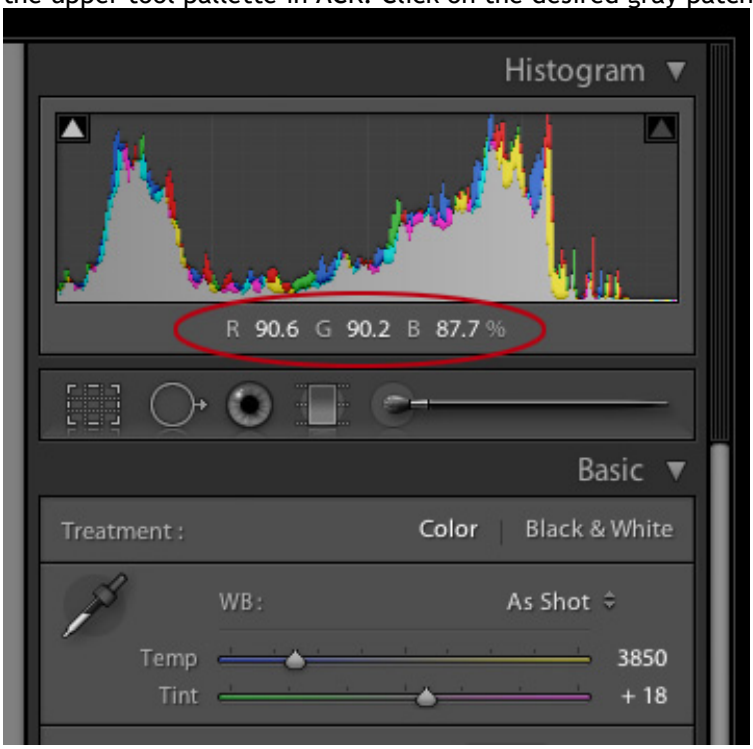
Download your target shot and open in Lightroom or ACR, as you would with any RAW image.

Adjusting the Target Shot

Cropping is done with Lightroom or ACR's crop tool. Crop to the four white dots just outside of the patch area. Use the rotate function of the crop tool to straighten the target image. Activating Lightroom 3's lens profile function will reduce lens distortion in your target shot, but this is not really necessary.



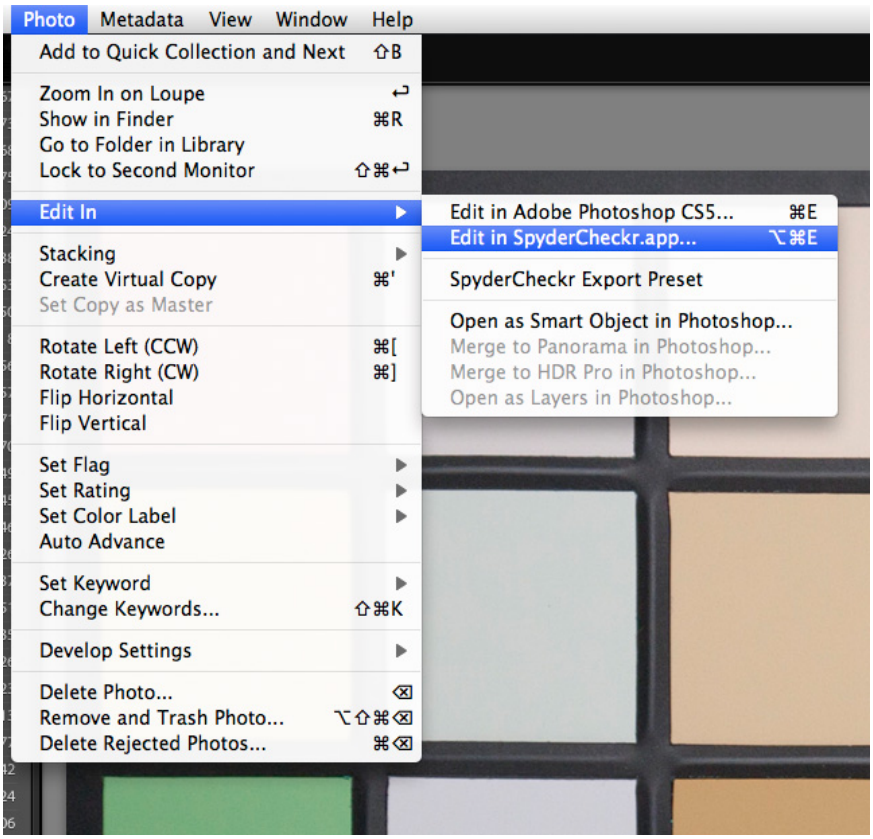
Any of the light or medium gray patches can be used to gray balance/white balance your image in Lightroom or ACR. The 20% gray patch (E2) is recommended. Use the white balance eyedropper tool in Lightroom's Develop mode, or from the upper tool pallette in ACR. Click on the desired gray patch.



Next look at RGB values or Percentages of the White patch (E1). Adjust the exposure slider until the white patch lists as approximately 90% in Lightroom, or about RGB 230, 230, 230 in ACR. Next check the black (E6). The Blacks adjustment (or in some cases the Shadows adjustment) is used to set the black value to 4% in Lightroom, or RGB 10, 10, 10 in ACR. If the value is below this level, it may be best to leave it as shot, or reshoot with brighter illumination.

Saving the Target for use in SpyderCheckr Application

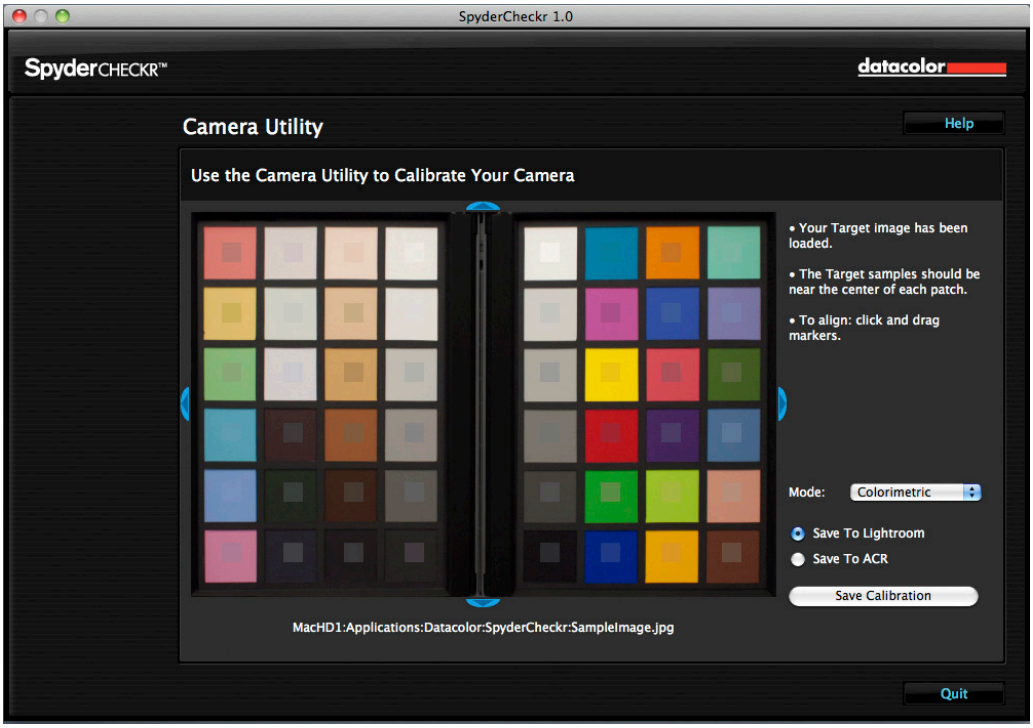
If you configured SpyderCheckr as optional editing app in Lightroom, you can trigger the export of your gray-balanced, black and white adjusted, cropped image by going to Menu > Photo > Edit In > SpyderCheckr, available in any Mode, but you will typically be in Develop mode. If you are using ACR, you will need to save the image to the desktop or some other appropriate location. Save as a Tiff file, in AdobeRGB.



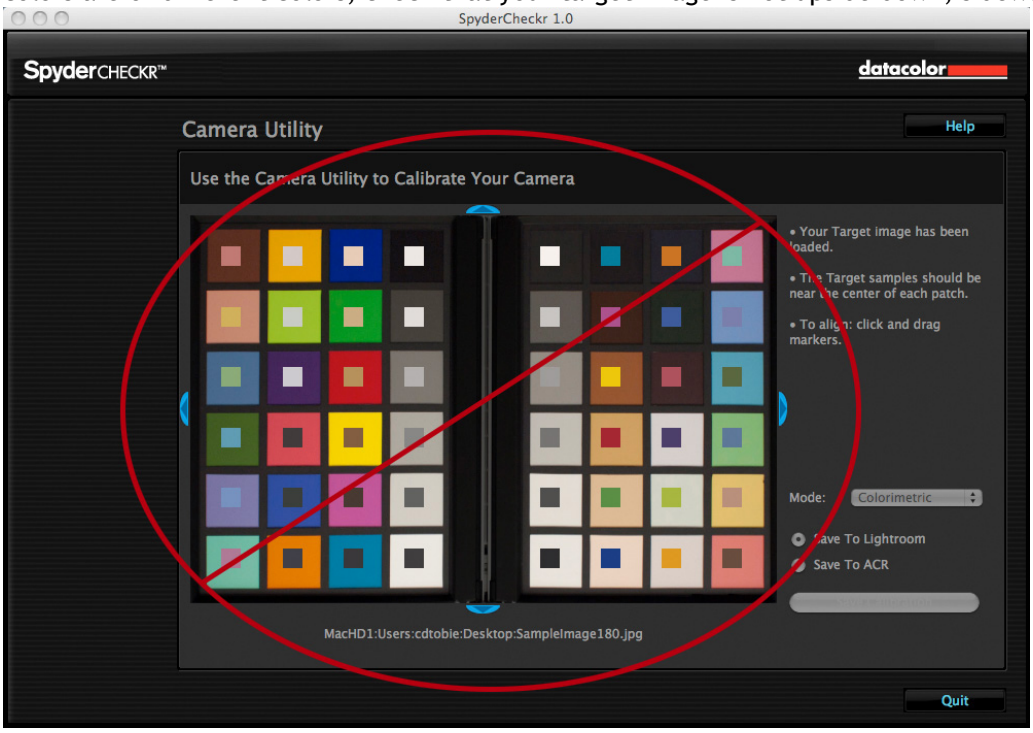
Launching the SpyderCheckr Application

Checkr will auto-launch if you have set it up correctly in Lightroom, and will open with your target image already imported into Checkr. Choose “Edit a Copy with Lightroom Presets” to assure that your whitebalance and exposure adjustments are included in the exported file. For ACR, go to the Checkr application's folder, double click on the Checkr app, and it will launch itself. Now drag your target file from the desktop into Checkr to import (you can also use the "Open" command from the menu).

Processing your Target Shot

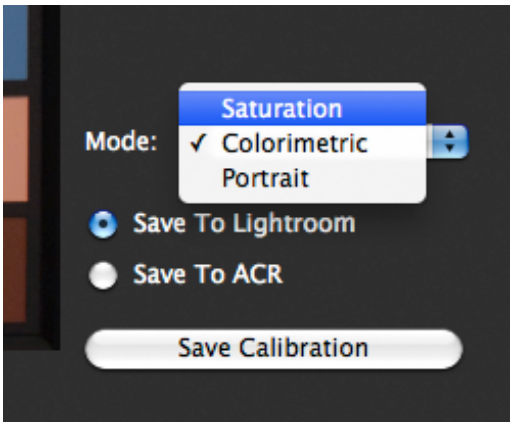


The sampling squares should already be pretty well placed within the correct patches of your Target shot if you shot and cropped appropriately. If not, you can drag on any edge or corner of the image area to adjust the fit. The colors inside the sampling squares should be a somewhat less saturated version of the patch colors. If the patch and sample colors are of different colors, check that your target image is not upside down, sideways, or inverted.



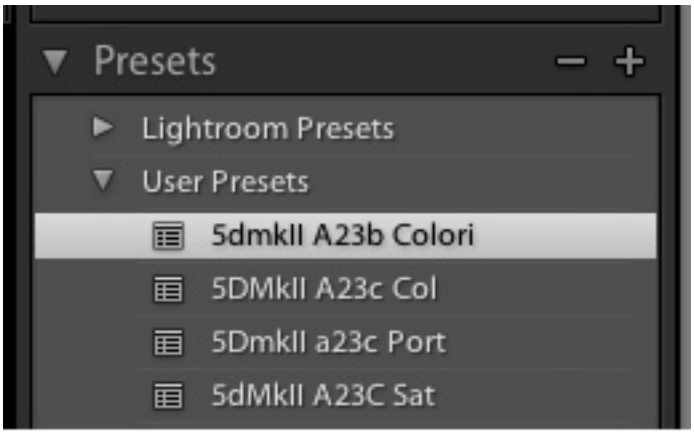
Once you have reviewed the location and orientation of the target image, click on the "Save Calibration To..." button and your calibration corrections will be calculated. You will have selected ACR or LR in advance, and will now be prompted to name your new calibration preset. This should include the name of the camera, and might include other data, such as lightsource or lens used.

SpyderCheckr Modes



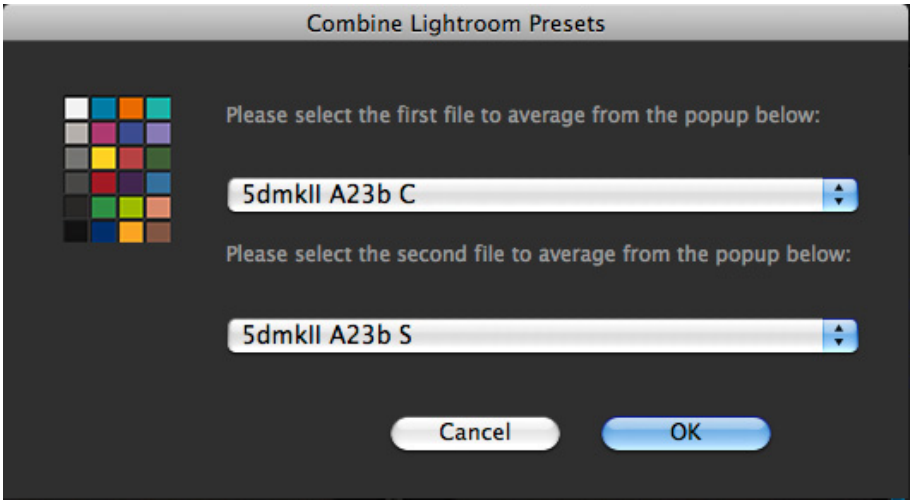
In SpyderCheckr's Preferences pane you will find a popdown list of mode choices. The three modes are described below:
Colorimetric mode should offer the most literal results, and is best when attempting to reproduce artwork or product colors.
Saturation mode offers results which are generally more pleasing for many types of images.
Portrait mode selectively reduces the color saturation of the skintone components to make portrait processing easier.
The effects of these modes are subtle, and may not be noticeable on some images.

Using your new Calibration



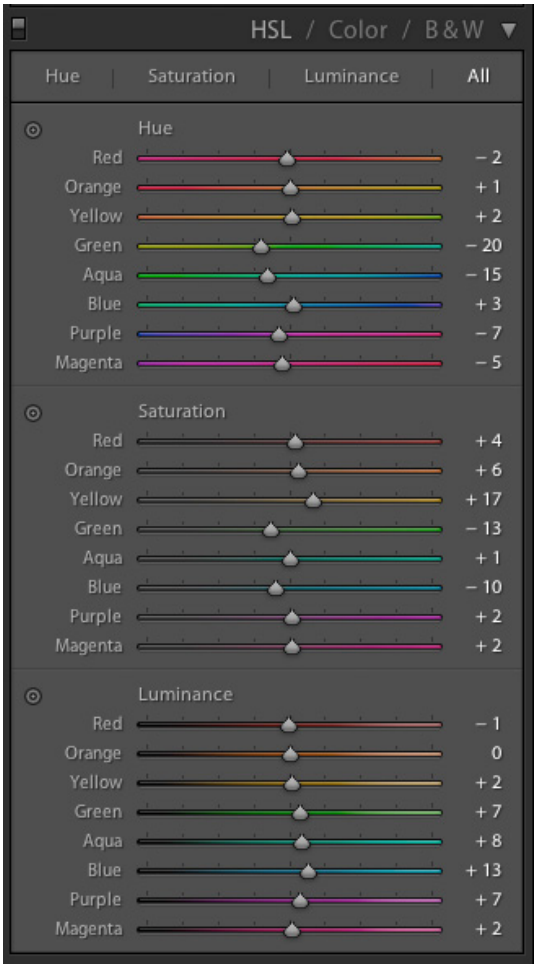
Relaunch Lightroom or ACR (your calibration data will NOT be available to you until you quit and restart Lightroom or ACR), and select an image shot with the same camera or camera and lens combination. Apply your preset from the User Presets list in the Develop mode of Lightroom or from Load Settings in the popdown menu to the right of the mode name (Basic, etc) in ACR. The changes from applying your calibration data should be subtle; the better your camera's native color, the less effect the calibration will produce. Once you have examined the results on a number of images of different types, and made sure it offers what you need, you can apply it to multiple images at once in Lightroom by selecting the images and then choosing the Preset. For ACR, applying settings to multiple images is done in Adobe Bridge.

Creating Multiple Lightsource Calibrations


Combine Lightroom Presets
Please select the first file to average from the popup below:
5dmkII A23b C
Please select the second file to average from the popup below:
5dmkII A23b S
Cancel
OK

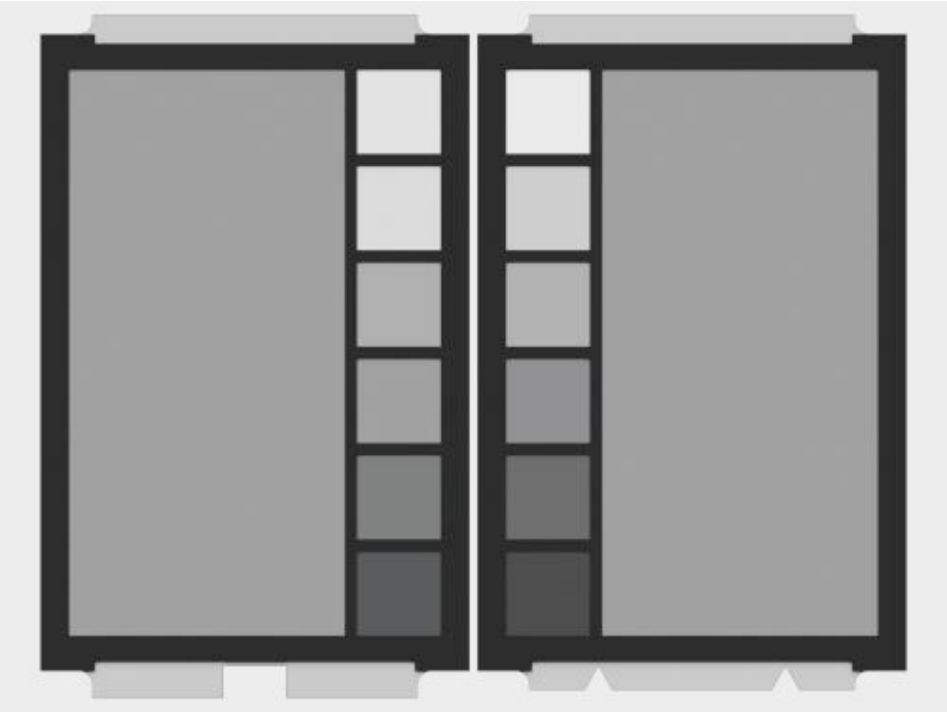
SpyderCheckr's Tools menu contains commands for creating multiple calibrations from any two existing Lightroom or ACR calibration presets. Choose any two presets built for the same camera, and a series of three new calibration presets will be created which offer increased precision for light sources between the original sources.

Adjusting your Calibration Preset



The SpyderCheckr color calibration adjustments are visible in Lightroom or ACR in the Hue, Saturation, Brightness section. This makes it easy for the user to make adjustments to the calibration. For example: if your printer prints skies that tend to be too purple under some lighting conditions, and you need to avoid adding too much magenta ink to the skytones; you can adjust the blue sliders in the HSL section to control this. Or, if your method of lighting portrait shots requires a different degree of saturation in the skintones, then the orange sliders in HSL can be adjusted to meet those needs. The edited settings can then be saved under a new name to provide a customized color calibration preset.

SpyderCheckr Gray Target



The inverse face of each Checkr target sheet holds the neutral target patches. These patches consist of the same gray ramp in 10% steps as the color face of the target. All colored patches have been removed to allow for improved neutral preception by the viewer. An enlarged 50% gray patch has been added to allow for uses requiring a larger gray sample.

Visual Gray Comparisons

The SpyderCheckr Gray Target can be used for various types of visual comparisons. Please keep in mind that visual comparisons of neutrals is a very subtle process, and that it cannot work effectively if bright colors are in the field of view. That's why we provide the Gray Targets on a separate face, as viewing the neutral patches on the Color Target sides will not offer precise results. Be sure to eliminate colored elements from all other visual fields which you intend to compare to the Checkr's Gray Target.

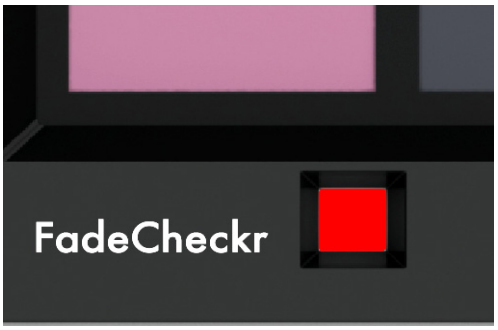
Checking your Display's Neutrality

Its possible to use the SpyderCheckr Gray Target to validate the neutrality of your monitors. Place the Checkr, with the Gray Target visible, against a neutral background under a medium color temperature, high CRI proofing light, or in a proofing box, that is visible at the same time as your monitor. Dimming ambient lighting, avoidance of backlight, and avoidance of colored objects in your field of view are all important to this process. As your eye adapts to the gray balance of the SpyderCheckr, shift your gaze to a totally neutral image on a totally neutral background on your display (the Black and White images in the Datacolor SpyderProof Matrix image are intended for this type of use). Shift your gaze back and forth carefully between the Checkr and the screen, and see if the screen appears to have a different color tone from the neutrals in the Checkr. If so, you may wish to change your calibration target for your display, to provide neutrals that will match those under your proofing light.

In-Camera Gray Balancing

Shoot the Gray Target face of the SpyderCheckr in your camera's White Balance or Gray Balance mode to produce an in-camera color balance for the lighting conditions under which you have shot the Checkr. This will assure that your initial view of images, quick exports to Jpg, or images downloaded directly to the iPad will have the intended color balance, and will assist in assuring that you do not overexpose as you shoot. The mix of several levels of gray in the Gray Target will provide a more global balance than shooting just one density of gray. Shooting the center section of the Gray Target will further enhance this multi-level function.

FadeCheckr



The FadeCheckr patch is there to assist users in determining how much light exposure their SpyderCheckr target has had, and also serves to remind users to keep the target closed when not in use. It is designed to fade from red to yellow after the equivalent of 30 days of full sun in the US Southwestern desert. This degree of exposure is sufficient to justify either replacing your Checkr Target Sheets (new sets will be available for purchase from Datacolor.com) or remeasuring the Target patches, so that you have accurate data on their current colors. This can be done with Spyder3Print SR (see section on Custom Measurement Values).

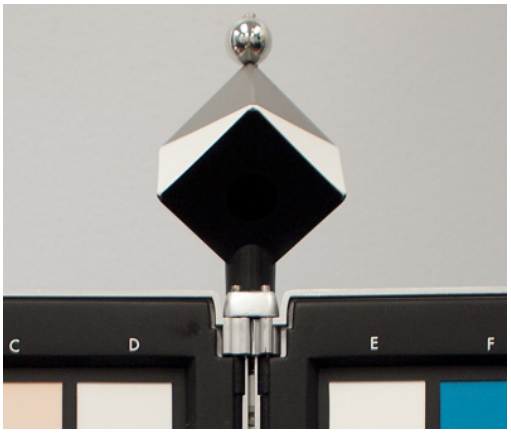
Custom Measurement Values

Users wishing to create a custom measurement set to replace or update the universal patch measurements provided with the SpyderCheckr software can do so with Spyder3Print SR (also a component of Spyder3Studio SR), using the new SpyderCheckr target option to produce a custom measurement set for your target. This custom measurement set can then be selected in your SpyderCheckr software, to update the software's measurement values from the universal values that were supplied with the software, to your new custom measurement set. (This feature will not be available until the v4.5 version of the Spyder3Print SR software, but users can build measurement sets with the Measure Tool's Export Mode in earlier versions).

Camera Calibration and Camera DNG Profiles

The SpyderCheckr software provides camera calibration which makes canned or custom DNG camera profiles unnecessary for most types of photography. It is recommended that the "Adobe Standard" option be selected in the camera profile popdown list in Lightroom and ACR. This is the default choice, and the only option available in most cases, unless canned or custom profiles have been imported by the user. It is possible to use any profile as the basis for SpyderCheckr calibration, but its important to remember what profile was in place when the calibration was created, and to use that same profile when processing images through the resulting camera calibration preset.

Using SpyderCheckr with SpyderCube



Once a camera calibration has been produced and is being used to process images from that camera in Lightroom or ACR, it is then possible to coordinate this workflow with the SpyderCube. The Cube can be used in the standard manner to determine the optimum whitepoint, exposure, black level and other basic light condition settings for a series of

images. The resulting adjustments can be applied separately from applying the SpyderCheckr color calibration preset, or for convenience, the SpyderCube adjustments can be built on top of the SpyderCheckr preset, and saved as a composite Color/Lighting correction preset.
This workflow eliminates the need to carry a color target with you, and avoids building color calibration from casual site shots of a color target. It is much simpler to shoot the SpyderCube on location if the lighting conditions are challenging, and combining that with a carefully built SpyderCheckr color calibration preset.

Using SpyderCheckr with other software

The SpyderCheckr target can be used with third party software products as well. To utilize it with software designed to accept the standard 24 patches, measure the patches in the appropriate order (which varies with different software) by measuring the last four columns E-H) in the appropriate pattern, to produce the needed patch order. To use all 48 patches in software which allows custom patch sets, measure all 48 patches in whatever order is appropriate. Save your custom measurement set in the format required by the software.

Some third party software will offer direct support for the SpyderCheckr target, and standard measurement files for it in future versions.

More Info

Please visit our website for more information on SpyderCheckr and our other products:

http://spyder.datacolor.com/index_us.php